EFFECTS OF EPRONOUNCE™ IN THE LEARNING OF PRONUNCIATION

by

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KESAN EPRONOUNCE™ DALAM PEMBELAJARAN SEBUTAN

ABSTRAK

Penyelidikan ini bertujuan untuk merekabentuk dan membangun tiga jenis mod persembahan epronounce™, dan mengkaji kesannya dalam pembelajaran sebutan di kalangan pelajar dengan pelbagai tahap visualisasi dan kebimbangan bahasa. Tiga jenis mod persembahan itu dikenali sebagai Teks + Suara + Simbol Fonetik (TSP), Teks + Suara + Simbol Fonetik + Pergerakan Mulut (TSPM), dan Teks + Suara + Simbol Fonetik + Isyarat Muka (TSPF) yang merupakan pembolehubah bebas dalam penyelidikan ini. Pembolehubah moderator adalah tahap-tahap visualisasi dan kebimbangan bahasa, manakala pembolehubah bersandar ialah skor pencapaian pascaujian. Skor praujian digunakan sebagai kovariat dalam penyelidikan ini. Soal Selidik Gaya Pemprosesan (SOP) dan Skala Kebimbangan Kelas Bahasa Asing (FLCAS) digunakan untuk mengukur tahap-tahap visualisasi dan kebimbangan bahasa masing-masing, dan Ujian Kecekapan Sebutan digunakan sebagai praujian dan pascaujian demi menilai prestasi sebutan. Sampel penyelidikan ini terdiri daripada 329 orang pelajar Darjah Lima (berusia 11 tahun) dari tiga buah sekolah di Pulau Pinang, Malaysia. Analisis Kovarians (ANCOVA) dan perbandingan antara pasangan dijalankan untuk mengkaji kesan utama serta kesan interaksi. Terdapat tiga hipotesis utama dengan tiga belas sub-hipotesis telah diuji. Hasil penyelidikan ini menunjukkan bahawa dengan menggunakan epronounce™, pelajar-pelajar mencapai skor pencapaian yang berbeza secara signifikan dalam ketiga-tiga mod persembahan dengan TSPF mod menghasilkan skor pencapaian tertinggi. Pelajar-pelajar dengan visualisasi tinggi mencapai skor pencapaian yang

lebih tinggi secara signifikan membandingkan pelajar-pelajar dengan visualisasi rendah dalam ketiga-tiga mod persembahan. Pelajar-pelajar dengan visualisasi rendah yang menggunakan TSPF mod mencapai skor pencapaian yang lebih tinggi secara signifikan berbanding dengan menggunakan TSPM mod dan TSP mod. Tidak terdapat perbezaan signifikan di antara skor pencapaian yang dicapai oleh pelajar-pelajar dengan pelbagai tahap kebimbangan bahasa dalam ketiga-tiga mod persembahan. Seolah-olah epronounce^{TM} dapat membawa pelajar-pelajar berkebimbangan bahaha rendah dan tinggi ke tahap kebimbangan bahasa sederhana untuk pembelajaran yang optimum dalam keadaan pembelajaran yang optimum seperti yang dijelaskan dalam hubungan garis melengkung antara kebimbangan dan prestasi. Keseluruhannya, penyelidikan ini menunjukkan bahawa TSPF mod dengan isyarat sosial adalah lebih berkesan dalam pembelajaran sebutan dengan simbol-simbol fonetik. Tambahan pula, potensi TSPF mod menetapkan rangka kerja pembangunan yang boleh digunakan sebagai panduan rekabentuk dan pembangunan bahan pelajaran sebutan multimedia yang selanjutnya.

EFFECTS OF EPRONOUNCE™ IN THE LEARNING OF PRONUNCIATION

ABSTRACT

The purpose of this study was to design and develop three presentation modes of epronounce™, and to investigate their effects in the learning of pronunciation among students with different levels of visualisation and language anxiety. The three presentation modes were Text + Sound + Phonetic Symbols (TSP), Text + Sound + Phonetic Symbols + Mouth Movements (TSPM), and Text + Sound + Phonetic Symbols + Face Gestures (TSPF), which were the independent variable of this study. The moderator variables were visualisation levels and language anxiety levels, while the dependent variable was the achievement scores of posttest. The pretest scores were used as covariate in this study. The Style of Processing (SOP) Questionnaire and Foreign Language Classroom Anxiety Scales (FLCAS) were employed to measure different levels of visualisation and language anxiety respectively, and the Pronunciation Competence Test was used as pretest and posttest to evaluate the pronunciation performance. The sample consisted of 329 Primary Five students (aged 11) from three different schools in Penang, Malaysia. Analyses of covariance (ANCOVA) and pairwise comparisons were conducted to examine the main effects as well as the interaction effects. There were three main hypotheses with thirteen sub-hypotheses tested. The findings of this study showed that by using epronounce™, the students attained significantly different achievement scores in the three presentation modes with TSPF mode yielded the highest achievement scores. High visual students attained significantly higher achievement scores than low visual

students in the three presentation modes. Low visual students using TSPF mode attained significantly higher achievement scores compared to using TSPM and TSP modes. There was no significant difference in the achievement scores attained by students with different levels of language anxiety in the three presentation modes. Seemingly epronounce™ is able to bring the low and high language anxiety students to medium language anxiety level for optimal learning under optimal learning condition as explained in the curvilinear relationship between anxiety and performance. In conclusion, this study strongly indicated that TSPF mode with social cues is more effective in the learning of pronunciation with phonetic symbols. Furthermore, the promising potential of TSPF mode establishes the development framework that could be used to guide the design and development processes of other multimedia pronunciation learning contents.

CHAPTER 1

INTRODUCTION

1.1 Background

The globalisation trend has reinforced the position of English as the lingua franca. English is the mother tongue of more than 350 million people in the world, and it is used by 1,000 - 1,500 million non-native speakers daily for communication (Katamba, 2005; Tapia, 2010). In the European Union, English (34%) is the most widely known language (Special Eurobarometer, 2005). For instance, Italy has made learning a foreign language compulsory from the first year of primary education with English being the most commonly taught language (Neri, Mich, Gerosa, & Giuliani, 2008). Study done by L. S. Kim (2003) also concluded that English is the most popular choice of foreign language in South East Asia.

In Japanese companies, there is a trend to make English their official in-house language. Japan's biggest online retailer, Rakuten, has taken the initiatives to make English the firm's official language. "No English, no job," said the CEO (Greig, 2010). In Beijing, learning English is part of an official drive to transform the Chinese capital into a 'world city'. The government implemented a reinforcement programme calling for all pre-schools to introduce English courses within five years. Police officers and civil servants are also required to pass English tests (Greig, 2010). The non-native English speaking countries with their huge populations are gearing up to meet the demand of English language.

Being able to communicate in English is relatively indispensable in today's world in the light of the increased people's mobility, joint study programmes, commercial networks, information technology, medicine, diplomacy, and many more. Moreover, the relationship between good pronunciation and social power cannot be dismissed (Mishra & Sharma, 2005). People with proficient pronunciation are usually regarded as more professional and they are respected by given higher social status. In this regard, most parts of the world are striving to master the language. Unfortunately, the non-native English speakers with different cultural backgrounds and native languages are experiencing pronunciation difficulties, commonly in segmental aspects with the focus on consonants, vowels and diphthongs (Por & Fong, 2011b). An illustration by Carson (2009) who has taught English as a foreign language reported that people from Chinese speaking background encounter problem in pronouncing /r/. They may instead produce the sound as /l/, thus leading to 'flied lice' rather than 'fried rice'. This is similar for Spanish or Indian speaking people, the sound of /v/ is like /b/, and German speaking people will mix up /v/ with /w/ (Carson, 2009). It is to say there is still bottom billion who forms the majority of the community are yet to be ready to pronounce correctly.

Pronunciation is definitely the obvious element distorting the meaning of a message. It is a key ingredient in the development of communicative competence. Simple words and simple grammar structures can be used to deliver message, but not 'simple pronunciation' (Szynalski, 2010). Unintelligible pronunciation makes comprehension difficult and it is frustrating to the listeners. To an extent, it can just be a jumble of unpronounceable and incomprehensible sounds that makes into an endless stream of noise (Jones, 2010). The listener might just keep asking 'What?'

and the speaker has to keep repeating the word or the sentence. More seriously, mispronunciation leads to misunderstanding and embarrassment. Wrong message is delivered and the speaker can sometimes be perceived as abrupt, or even rude (Celce-Murcia, Brinton, & Goodwin, 2007).

Some examples of mispronunciation are illustrated by Jones (2010) and Hussaini (2011). A Spanish student once astonished his English teacher with the complaint that he was having trouble with his bowels. It took a moment, but then the teacher subsequently realised that in Spanish, /v/ in the initial position is pronounced as /b/. She then showed him in a dictionary about what he had actually said. The student was actually having trouble with his vowels, but due to mispronunciation the teacher had reasonably concerned for his health (Jones, 2010). Similarly, in the local news broadcast, TV3 (one of the Malaysia's commercial television station) late news programme, *Nightline*, the news presenter mispronounced 'head' as 'had' and 'said' as 'sad'. In an early morning programme on Berita Awani (in one of the Astro channels delivers 24-hour news and current affairs), the presenter pronounced 'Pope John Paul' as 'Pop John Paul' (Hussaini, 2011).

Pronunciation is a salient element of effective communication. To be able to speak English comprehensibly, the speakers need to acquire correct pronunciation. Rivers (1968) contended the difficulty of pronunciation is barely due to the lack of vocabulary and grammar, but primarily it is because of the sounds are produced incorrectly. Celce-Murcia, Brinton, and Goodwin (1996) also affirmed this claim by commenting that if a speaker's pronunciation is below average, he or she will not be able to communicate orally even though the mastery of vocabulary and grammar is

excellent. Therefore, it is firmly suggested in this study that English pronunciation is to be prominently reinforced.

In traditional classroom setting, the conventional method of pronunciation learning is heavily dependent on human teachers. This study innovatively designed and developed 'epronounce™', an interactive multimedia pronunciation learning management system, to address the pronunciation difficulties of non-native English speakers. The epronounce™ of this study can be located at http://epronounce.usm.my/ as illustrated in Figure 1.1, and it has been trademarked under the Copyright Act 1987. To have the most compatible multimedia effects, the required browser is Internet Explorer 9.

Figure 1.1 The Home Page of epronounce™

The epronounce™ in this study emerges as a timely and effective tool to support personalised one-to-one student-centred learning of correct pronunciation among non-native English speakers. It serves as a complementary learning aid by extending the physical reach of real-time pronunciation resources, particularly where onsite English teacher is not available or there is a shortage of qualified English teachers. To address the issues of mispronunciation across all cultures, this study designed and developed epronounce™ by using the universally agreed system of phonetic symbols, the International Phonetic Alphabet (IPA) throughout the whole repository. The epronounce™ optimises the strengths of IPA phonetic symbols by digitising them for students to understand and to apply phonetic symbols for correct pronunciation without mere reliance on ear. To further enhance epronounce™, presentation modes with mouth movements and face gestures are also designed and developed to visually and verbally guide students through the pronunciation learning process in supplementing the phonetic symbols.

To design and develop the feasible and enticing epronounce™, factors affecting pronunciation acquisition are studied to determine the effectiveness of the multimedia instructional design. In the study of Gömleksiz (2001), it is noted that non-native speakers encounter problems in the learning of new language owing to some contributory factors, for instance, the level of cognitive development, psychological profiles and cultural background. According to Baker (2008), individual differences influence learners to perceive and produce non-native language accurately. Factors affecting pronunciation acquisition lie primarily in the learners themselves. Hence, specifically in this study, factors within the students which are visualisation and language anxiety are brought exclusively into focus in

this study. Studies conducted by Cronbach (1957), Swanson (1990), Shute and Gawlick-Grendell (1994), Fong (2000), Li (2008) and Aldalalah (2010) showed that the learning outcomes of students are considerably improved when the modes of instruction are adapted to their psychological profiles. The matching and mismatching of instructional design features have significant effects upon learning outcomes.

Considering graphics are the main source of information in multimedia learning environments, this study particularly concerns the moderating effect of visualisation levels in affecting the learning outcomes of using epronounce™. The visualisation of every individual differs in the degree to which they depend on graphics or on text to process information (McEwan & Reynolds, 2007). In the process of learning, high visuals prefer diagrams or pictures added to text-based contents, whereas low visuals process information via words or language symbols (Jonassen & Grabowski, 1993). Performance measures have already indicated that learners' visualisation has a significant impact on learning outcomes. The results indicated that learners' visualisation influences the structure of their logical discourse, via their differing methods of handling information and transferring information between modalities (Oberlander, Monaghan, Cox, Stenning, & Tobin, 1998). In other words, the learners' performance will be improved when the learning contents and interventions respond appropriately to the different levels of visualisation (Riding & Read, 1996; Riding & Staley, 1998; Atkinson, 2004).

Clinical experience, empirical findings and personal reports attest to the existence of anxiety reactions with respect to language learning in individuals

(Horwitz, 2001). Language anxiety is an individual's likelihood of becoming anxious in the language classroom, particularly for second/foreign language. When anxiety is limited to the language-learning situation, it falls into the category of situation-specific anxiety (Horwitz, Horwitz, & Cope, 1986). Language anxiety generally has a debilitating effect on the oral performance of non-native speakers, and it is one of the most highly examined variables in psychology and education (Horwitz, 2001). Specifically, pronunciation is more anxiety-provoking because learners are very self-conscious when they are required to interact with others that might expose their inadequacies. In respond to the research area of this study is pronunciation learning of non-native language specifically, language anxiety is included in this study to investigate its moderating effect in affecting the learning outcomes of using epronounce™. According to the findings of Trickett and Moos (1995), it is possible to reduce language anxiety by offering the learners sincere support and interest. Palacios (1998) also found that lack of competition and clear task orientation are associated with lower anxiety levels.

Therefore, this study is designed to investigate the effects of epronounce™ with three modes of presentation on students with different visualisation and language anxiety levels in learning correct pronunciation.

1.2 Problem Statement

The problem statement investigated in this study stems from the researcher's previous experiences of teaching English in secondary and tertiary levels as well as being a curriculum developer for preschool education. The researcher observed that students from non-native English speaking background in general encounter

difficulties in pronouncing English words correctly. In addition, they cannot understand the phonetic symbols commonly seen in dictionaries and make use of the phonetic symbols for correct pronunciation. They are aware of the existence of phonetic symbols but are unclear of their usage.

To establish foundation for her observation, the researcher conducted a preliminary survey (Appendix A) in March 2011 on the teaching and learning of English pronunciation in schools in Malaysia. The survey items are generated from a review of literature and insights from discussions with teachers. There are 18 teachers from 11 different schools responded the survey. To get an overview of the overall students' pronunciation performance across different levels, the preliminary survey was conducted on teachers from national primary schools, national type Chinese primary schools and national secondary schools. The summarised table of the preliminary survey findings is attached in Appendix B.

The findings of the preliminary survey demonstrated 88.9% of the teachers agreed that students have problems in pronouncing English words correctly. Close to 90% of the teachers indicated that students do not know how to use phonetic symbols and 88.9% agreed that phonetic symbols are useful in learning English pronunciation. Fraser (2000) observed that many students still encounter major hurdles with English pronunciation even after years of learning the language. This is mainly due to most of them pronounce English words by referring to their spellings, which is also found by 94.4% of the teachers in the preliminary survey. English is a non-phonetic language in which there is no direct relationship between the spelling and the sound. Only a small number of letters are used to represent the basic sounds or phonemes of

the spoken language as the rules governing grapheme-phoneme correspondence in English orthography are irregular (Lee, Stigler, & Stevenson, 1986). For example, '**ch**' for the word '**ch**ore' is pronounced as /ʧ/, but the same letters '**ch**' for the word '**ch**oral' is pronounced as /k/. The inconsistencies between written letters and spoken sounds in English often result in mispronunciation, and this approach is still repeated in the new Primary School Standard Curriculum. Therefore, phonetic symbols are essentially needed for phoneme representation in order to learn correct pronunciation. The chief principle of the IPA is providing one unique symbol for one discrete sound and the symbol is used consistently for all languages (The International Phonetic Association, 2003). As there is no overlapping of sounds, the phonetic symbols reduce the ambiguities and this is easier for the learners of non-native English speaking background to understand and to perceive sounds correctly.

The conventional aural-oral method is very prominent in the existing pronunciation learning programmes. It is considered the fastest way to acquire basic competence in pronunciation by duplicating the sounds. This method of sole emphasis on hearing, imitating and reproducing the sounds, however, eventually shapes the learners to be passive and dependent. They are merely required to continually make attempts to imitate the sounds without needing to discern critically whether the model pronunciation is produced correctly and how the sounds are formed. Without any explicit understanding of the sounds, the learners will inevitably repeat the incorrect sounds even if the pronunciation is sounded incorrectly. Moreover, the hearing of the learners is not adequately reliable as they are strongly influenced by the "phonological matrix of their native languages" (Schütz, 2008, p. 116). The use of phonetic symbols in this study enables learners to

become active, independent and critical without mere reliance on ear. It allows learners to not only hear how words sound but also see how sounds are formed. If two differently spelled words are transcribed with the same symbols, it means they are pronounced with the same sound. By clicking the sound panel in epronounce^{TM}, students are able to hear the sounds and see the phonetic transcriptions. All the word pronunciation in epronounce^{TM} is transcribed with phonetic symbols. To further enhance epronounce^{TM}, presentation modes with mouth movements and face gestures are also designed and developed to visually and verbally guide students through the pronunciation learning process in supplementing the phonetic symbols.

The newly-implemented Primary School Standard Curriculum (KSSR - Kurikulum Standard Sekolah Rendah) aims to implement teaching and learning sound system with understanding of phonetic symbols and the corresponding sounds. The KSSR replaces the Primary School Integrated Curriculum (KBSR - Kurikulum Bersepadu Sekolah Rendah), which was first introduced in 1983, and subsequently reviewed in 2003 (Bahagian Pembangunan Kurikulum Kementerian Pelajaran Malaysia, 2011). The Content and Learning Standards of KSSR highlight the objectives to equip students to be able to apply knowledge of sounds and pronounce words correctly. Students are to be able to recognise and articulate initial, medial and the final sounds in single syllable words within given context, as shown in Figure 1.2 and Figure 1.3 (Bahagian Pembangunan Kurikulum Kementerian Pelajaran Malaysia, 2011). However, in actual fact, the teachers admitted that sound system contained in the syllabus is largely ignored in the classroom ever since the KBSR English curriculum (Bahagian Pembangunan Kurikulum Kementerian Pelajaran Malaysia, 2003). They would focus on the presumed more important aspects of language, such

as grammar and writing, and emphasise more on preparing students for examinations (Nair, Krishnasamy, & Mello, 2006). Their assumption is also wrongly placed on the basis that students who have mastered grammar and vocabulary are least likely to have problems with pronunciation. Research by Hinofotis and Bailey (1980) demonstrated that pronunciation is the crucial feature that most severely impairs the communication process of non-native English speakers. This claim is further affirmed by Dorling Kindersley (2011) that "the ability to speak English fluently requires not only a good understanding of grammar and a rich vocabulary but also the ability to speak smoothly and expressively with correct pronunciation…" (p. 28).

Figure 1.2 Document of KSSR on Primary English Language Curriculum

Content and Learning Standards Years One and Two- Reading

CONTENT STANDARD	LEARNING STANDARDS Year One	LEARNING STANDARDS Year Two
2.1 By the end of the 6-year primary schooling, pupils will be able to apply knowledge of sounds of letters to recognise words in linear and non-linear texts.	2.1.1 Able to identify and distinguish the shapes of the letters in the alphabet. 2.1.2 Able to recognise and articulate initial, medial and the final sounds in single syllable words within given context:	2.1.1 Able to recognise and articulate initial, medial and the final sounds in single syllable words within given context:

(a)	/s/ (s)	/æ/ (a)	/t/ (t)	p/ (p)		
(b)	/ɪ/ (i)	/n/ (n)	/m/ (m)	/d/ (d)		
(c)	/g/ (g)	/ɒ/ (o)	/k/ (c)	/k/ (k)		
(d)	/k/ (ck)	/e/ (e)	/ʌ/ (u)	/r/ (r)		
(e)	/h/ (h)	/b/ (b)	/f/ (f,ff)	/l/ (l,ll)	/s/ (ss)	
(f)	/dʒ/ (j)	/v/ (v)	/w/ (w)	/ks/ /gz/ (x)		
(g)	/j/ (y)	/z/ (z,zz)	/kw/ (qu)			
(h)	/ʦʃ/ (ch)	/ʃ/ (sh)	/θ/ /ð/ (th)	/ŋ/ (ng)		

(a)	/eɪ/ (ai)	/iː/ (ee)	/aɪ/ (igh)	/əʊ/ (oa)	/ʊ/, /uː/ (oo)
(b)	/ɑː/ (ar)	/ɔː/ (or)	/ɜː/ (ur)	/əʊ/ (ow)	/ɔɪ/ (oi)
(c)	/ɪə/ (ear)	/eə/ (air)	/ʊə/ (ure)	/ɜː/ (er)	
(d)	/eɪ/ (ay)	/aʊ/ (ou)	/aɪ/ (ie)	/iː/ (ea)	
(e)	/ɔɪ/ (oy)	/ɜː/ (ir)	/uː/ (ue)	/ɔː/ (aw)	
(f)	/w/ (wh)	/f/ (ph)	/juː/ (ew)	/əʊ/ (oe)	/ɔː/ (au)
(g)	/eɪ/ (a-e)	/iː/ (e-e)	/aɪ/ (i-e)	/əʊ/ (o-e)	/uː/ (u-e)

Figure 1.3 KSSR Content and Learning Standards for Primary English Language

Fraser (2000) noted that many English teachers struggle with teaching pronunciation and concluded that the teacher training courses give them insufficient basics of phonetics. The teacher trainers in Malaysia also revealed that not much emphasis is placed in preparing teachers for teaching pronunciation (Nair et al., 2006). Besides, the findings of the preliminary survey also demonstrated that 50% of the teachers admitted they were not given sufficient training in phonetics during their teachers' training courses. Pronunciation has often been viewed as a skill that is most resistant to teach due to its strict phonemic description, complicated phonetics and phonology, complex and often unproductive terminology of articulatory phonetics. Therefore, it comes to no surprise that disproportionately scant attention is paid to pronunciation in teachers' training courses. The lack of training in this area has thus inadequately equipped English teachers to be confident to deal with pronunciation. With respect to their lack of skills in teaching correct pronunciation, the teachers gradually dislike pronunciation and avoid teaching it. This phenomenon leads to the

teaching and learning of pronunciation remains extensively neglected in the field of English language curriculum.

In addition, looking at the high teacher-student ratio in the classroom, it is unrealistic for teachers to attend to individual student's speech sounds even the teacher is well-equipped with phonetics and phonology expertise. There are usually about 30 to 40 students or even more in a class. In a study comprising twelve English teachers in Malaysia, it is found that the respondents agreed they have insufficient time to teach pronunciation and lack guidance on how to cope with the problems effectively (Nair et al., 2006). Similarly, in the findings of the preliminary survey, 55.6% of the teachers encounter problems to correct each student's pronunciation in class, and 94.4% highlighted students lack sufficient time to practise pronunciation in class. Teachers experience difficulties when teaching pronunciation in such large classes. The teacher-student attention is minimised and students' opportunities to speak are lessened (Brown, 2001; Kankam, 2003). This situation is unavoidably worsened with the fact that proficiency and ability vary widely across students, and it is acknowledged in the preliminary survey that 72.2% of the teachers highlighted the varied pronunciation competence of students causes them having difficulties to monitor the progress. The same contents and assessment tools used for low proficiency students are seemed to be less challenging for students with high proficiency levels, and vice versa (Lee, 2008). Furthermore, the teaching and learning quality is further constrained by limited human capabilities, such as patience of teachers and consistent quality of sound production for every repetition. Even an excellent teacher of pronunciation can only repeat the pronunciation of a word for mere limited times and also with varied quality each time.

Besides, under traditional formal classroom setting, learners are reluctant to practise their pronunciation in front of others as the mistakes made causing them to feel embarrassed and intimidated, which is also highlighted by 61.1% of the teachers in the preliminary survey. For shy or introverted learners particularly, they tend to avoid participating in pronunciation practice in class which requires them to say out the sounds publicly. Furthermore, they are more likely to be extra nervous and anxious when attending English class as they are worried about being called on. This type of learning environment hinders learners from improving, and they gradually become more and more passive.

Mispronunciation makes comprehension difficult and leads to misunderstanding and communication breakdown. The globalised educational networks and commercial industries particularly require people to communicate with their counterparts across borders. Miscommunication may thus cause unpleasant social relationships and the loss of opportunities.

The issues of correct pronunciation have been the concern in English language teaching and learning. Therefore, the researcher decided to investigate innovative solution to this problem with epronounce^{TM} by optimising the capacity of phonetic symbols, mouth movements and face gestures. In order to demonstrate the articulation manner for correct pronunciation with phonetic symbols, the visual demonstration of mouth movements and face gestures enhances the learners' speech production by reducing phoneme errors. There are 83.3% of the teachers in the preliminary survey agreed that observing visual demonstration, such as mouth movements and face gestures is useful in learning pronunciation. The areas of

auditory cortex of human brains are activated in hearing when the learners follow the mouth movements or face gestures of a sound production (Calvert et al., 1997).

In regard to the design of multimedia interface, visualisation level is particularly relevant because it involves presenting graphics and text to learners. With the growth of multimedia learning environments, the importance of identifying level of visualisation is found to be increasing (Ramsey & Deeter-Schmelz, 2008). As learners are loaded with both visual and verbal information, it is critical to understand how the visualisation level affects their learning performance as evidenced by the research of Gould (1990), Welsh and Null (1991), Ramsey and Deeter-Schmelz (2008) that the interaction of visualisation level and interface design affect learning. Thus, this study attempts to examine the effects of learners' visualisation levels on pronunciation learning when using epronounce^{TM} and focuses on addressing the needs of the less advantaged group, the low visual learners.

Language anxiety is an impediment to both language learning and language production for learners (Chan & Wu, 2004). Gardner and MacIntyre (1993) claimed that the strongest negative correlate of language achievement is anxiety. Steinberg and Horwitz (1986) revealed in their research that foreign language anxiety inhibits students from practising the target language. More specifically in this study, the effects of language anxiety on pronunciation learning are particularly concerned in view of its potential negative consequences in speaking performance. Pronunciation is generally believed to be one of the more, if not the most, anxiety-producing tasks in second/foreign language learning (Horwitz et al., 1986; MacIntyre & Gardner, 1991; Price, 1991; Young, 1991). The pervasiveness of language anxiety in second/foreign language learning led to the investigation in this study to examine the

use of epronounce™ as a tool in the reduction of language anxiety by creating non-threatening learning environment to particularly address the needs of high language anxiety learners while improving their pronunciation competence.

1.3 Purpose of the Study

The purpose of this study is to design and develop three presentation modes of epronounce™, and to investigate their effects in the learning of pronunciation among students with different levels of visualisation and language anxiety.

The three modes of interactive multimedia presentation designed and developed for evaluation are as follows:

(i) Text + Sound + Phonetic Symbols (TSP)
(as illustrated in Figure 1.4);

(ii) Text + Sound + Phonetic Symbols + Mouth Movements (TSPM)
(as illustrated in Figure 1.5);

(iii) Text + Sound + Phonetic Symbols + Face Gestures (TSPF)
(as illustrated in Figure 1.6).

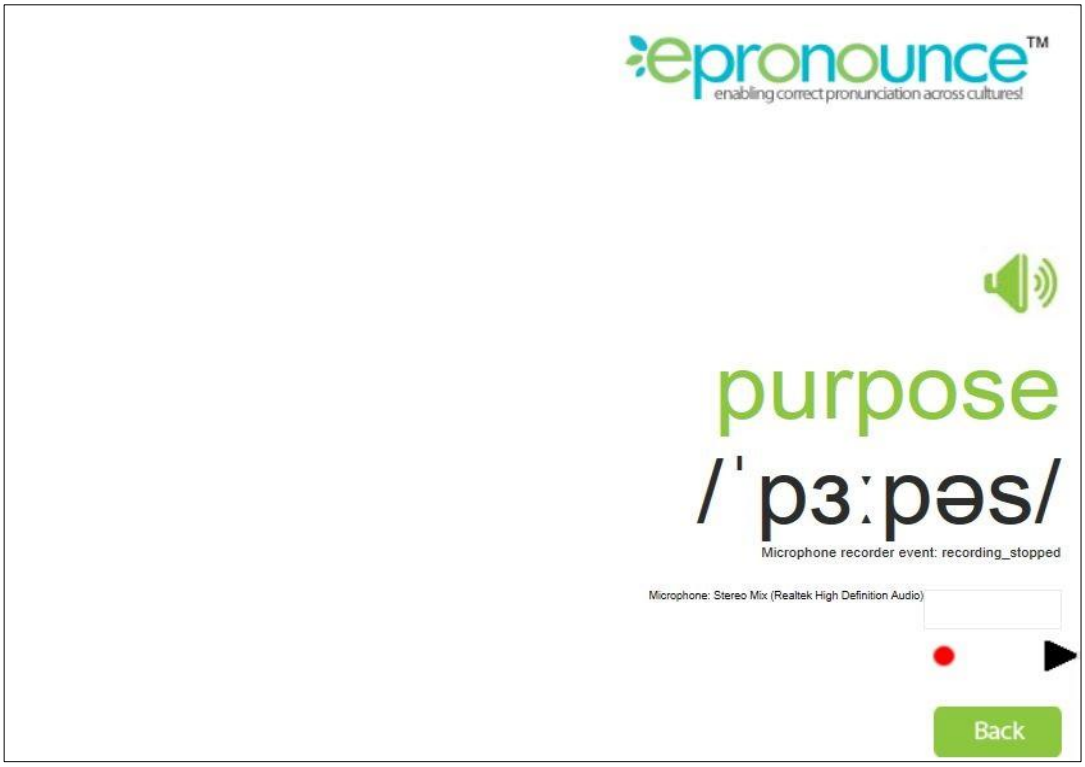

Figure 1.4 Text + Sound + Phonetic Symbols (TSP)

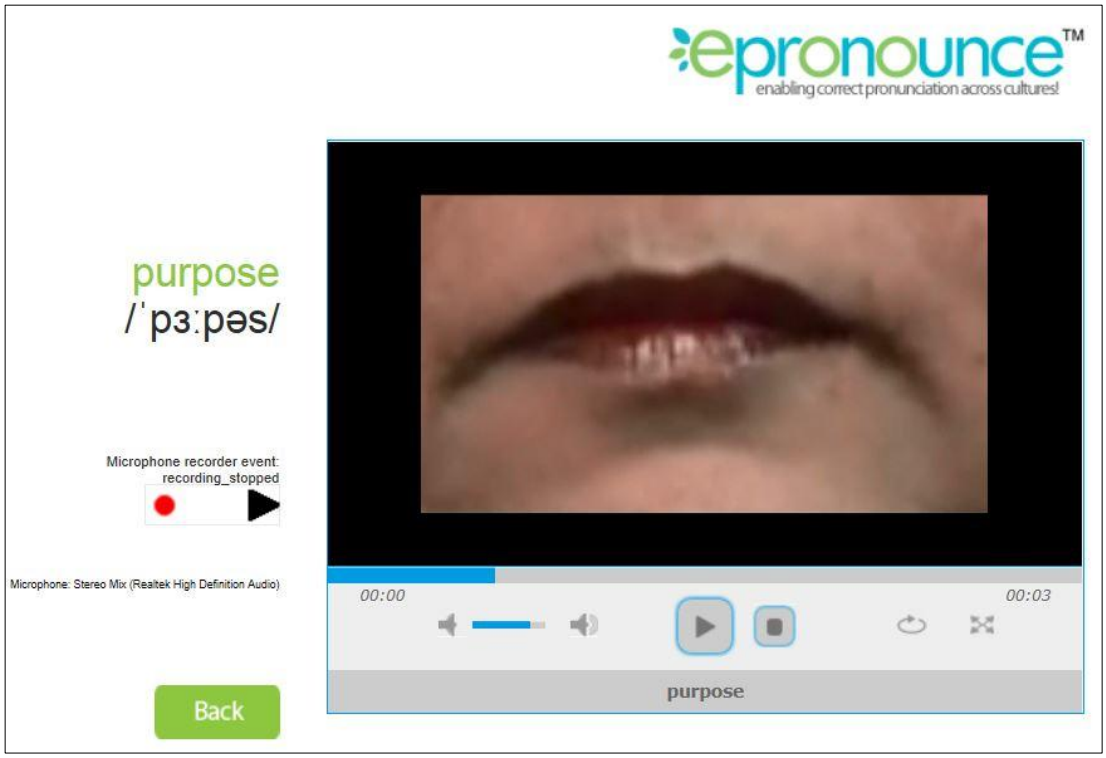

Figure 1.5 Text + Sound + Phonetic Symbols + Mouth Movements (TSPM)

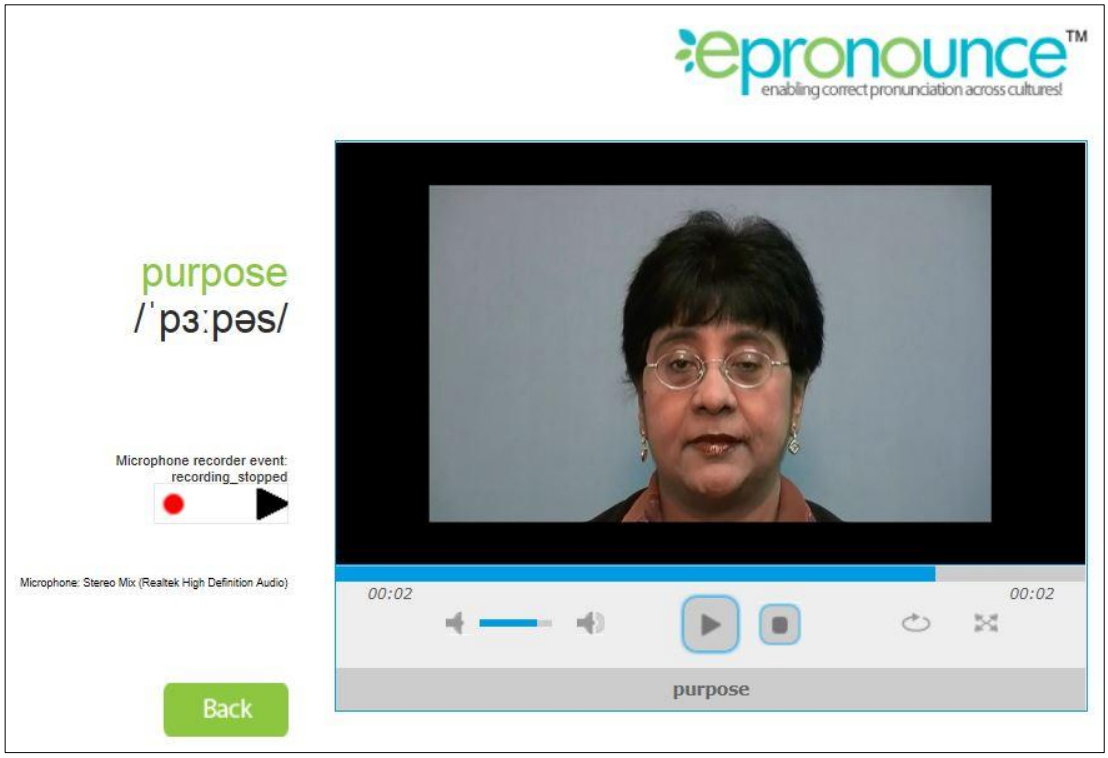

Figure 1.6 Text + Sound + Phonetic Symbols + Face Gestures (TSPF)

1.4 Research Objectives

The objectives of this study are as follows:

(i) To design and develop epronounce™ - the multimedia pronunciation learning management system incorporating phonetic symbols, mouth movements and face gestures.

(ii) To determine the effects of using the three modes: Text and Sound and Phonetic Symbols (TSP), Text and Sound and Phonetic Symbols and Mouth Movements (TSPM), Text and Sound and Phonetic Symbols and Face Gestures (TSPF) in the learning of pronunciation on the achievement scores.

(iii) To determine whether there is any significant difference in achievement scores among students with different levels of visualisation in using TSP, TSPM, and TSPF modes.

(iv) To determine whether there is any significant difference in achievement scores among students with different levels of language anxiety in using TSP, TSPM, and TSPF modes.

1.5 Research Questions

The research questions that drive this study are as follows:

1 By using epronounce^{TM}, will the students attain significantly different achievement scores in the three presentation modes?

1.1 Will students using the Text + Sound + Phonetic Symbols + Face Gestures (TSPF) mode attain significantly higher achievement scores (AS) than students using the Text + Sound + Phonetic Symbols + Mouth Movements (TSPM) mode?

1.2 Will students using the Text + Sound + Phonetic Symbols + Face Gestures (TSPF) mode attain significantly higher achievement scores (AS) than students using the Text + Sound + Phonetic Symbols (TSP) mode?

1.3 Will students using the Text + Sound + Phonetic Symbols + Mouth Movements (TSPM) mode attain significantly higher achievement scores (AS) than students using the Text + Sound + Phonetic Symbols (TSP) mode?

2 By using epronounce™, will the students with different levels of visualisation attain significantly different achievement scores in the three presentation modes?

2.1 Will high visual (HV) students attain significantly higher achievement scores (AS) than low visual (LV) students in the three presentation modes?

2.2 Will low visual students using the Text + Sound + Phonetic Symbols + Face Gestures (TSPF) mode attain significantly higher achievement scores (AS) than low visual students using the Text + Sound + Phonetic Symbols + Mouth Movements (TSPM) mode?

2.3 Will low visual students using the Text + Sound + Phonetic Symbols + Face Gestures (TSPF) mode attain significantly higher achievement scores (AS) than low visual students using the Text + Sound + Phonetic Symbols (TSP) mode?

2.4 Will low visual students using the Text + Sound + Phonetic Symbols + Mouth Movements (TSPM) mode attain significantly higher achievement scores (AS) than low visual students using the Text + Sound + Phonetic Symbols (TSP) mode?

3 By using epronounce™, will the students with different levels of language anxiety attain significantly different achievement scores in the three presentation modes?

3.1 Will students with medium language anxiety (ML) attain significantly higher achievement scores (AS) than students with low language anxiety (LL) in the three presentation modes?

3.2 Will students with medium language anxiety (ML) attain significantly higher achievement scores (AS) than students with high language anxiety (HL) in the three presentation modes?

3.3 Will students with low language anxiety (LL) attain significantly higher achievement scores (AS) than students with high language anxiety (HL) in the three presentation modes?

3.4 Will students with high language anxiety (HL) using the Text + Sound + Phonetic Symbols + Face Gestures (TSPF) mode attain significantly higher achievement scores (AS) than students with high language anxiety (HL) using the Text + Sound + Phonetic Symbols + Mouth Movements (TSPM) mode?

3.5 Will students with high language anxiety (HL) using the Text + Sound + Phonetic Symbols + Face Gestures (TSPF) mode attain significantly higher achievement scores (AS) than students with high language anxiety (HL) using the Text + Sound + Phonetic Symbols (TSP) mode?

3.6 Will students with high language anxiety (HL) using the Text + Sound + Phonetic Symbols + Mouth Movements (TSPM) mode attain significantly higher achievement scores (AS) than students with high language anxiety (HL) using the Text + Sound + Phonetic Symbols (TSP) mode?

1.6 Research Hypotheses

The level of significance to be used for this study is 0.05. The hypotheses of this study that correspond to the above research questions are stated in the alternate form with reference from the literature reviews.

H_1 By using epronounce™, the students will attain significantly different achievement scores in the three presentation modes.

$H_{1.1}$ Students using the Text + Sound + Phonetic Symbols + Face Gestures (TSPF) mode will attain significantly higher achievement scores (AS) than students using the Text + Sound + Phonetic Symbols + Mouth Movements (TSPM) mode.

$$AS_{TSPF} > AS_{TSPM}$$

$H_{1.2}$ Students using the Text + Sound + Phonetic Symbols + Face Gestures (TSPF) mode will attain significantly higher achievement scores (AS) than students using the Text + Sound + Phonetic Symbols (TSP) mode.

$$AS_{TSPF} > AS_{TSP}$$

$H_{1.3}$ Students using the Text + Sound + Phonetic Symbols + Mouth Movements (TSPM) mode will attain significantly higher achievement scores (AS) than students using the Text + Sound + Phonetic Symbols (TSP) mode.

$$AS_{TSPM} > AS_{TSP}$$

H_2 By using epronounce^{TM}, the students with different levels of visualisation will attain significantly different achievement scores in the three presentation modes.

$H_{2.1}$ High visual (HV) students will attain significantly higher achievement scores (AS) than low visual (LV) students in the three presentation modes.

$$AS_{HV} > AS_{LV}$$

$H_{2.2}$ Low visual students using the Text + Sound + Phonetic Symbols + Face Gestures (TSPF) mode will attain significantly higher achievement scores (AS) than low visual students using the Text + Sound + Phonetic Symbols + Mouth Movements (TSPM) mode.

$$AS_{LV\text{-}TSPF} > AS_{LV\text{-}TSPM}$$

$H_{2.3}$ Low visual students using the Text + Sound + Phonetic Symbols + Face Gestures (TSPF) mode will attain significantly higher achievement scores (AS) than low visual students using the Text + Sound + Phonetic Symbols (TSP) mode.

$$AS_{LV\text{-}TSPF} > AS_{LV\text{-}TSP}$$

$H_{2.4}$ Low visual students using the Text + Sound + Phonetic Symbols + Mouth Movements (TSPM) mode will attain significantly higher achievement scores (AS) than low visual students using the Text + Sound + Phonetic Symbols (TSP) mode.

$$AS_{LV\text{-}TSPM} > AS_{LV\text{-}TSP}$$

H_3 By using epronounce^{TM}, the students with different levels of language anxiety will attain significantly different achievement scores in the three presentation modes.

$H_{3.1}$ Students with medium language anxiety (ML) will attain significantly higher achievement scores (AS) than students with low language anxiety (LL) in the three presentation modes.

$$AS_{ML} > AS_{LL}$$

$H_{3.2}$ Students with medium language anxiety (ML) will attain significantly higher achievement scores (AS) than students with high language anxiety (HL) in the three presentation modes.

$$AS_{ML} > AS_{HL}$$

$H_{3.3}$ Students with low language anxiety (LL) will attain significantly higher achievement scores (AS) than students with high language anxiety (HL) in the three presentation modes.

$$AS_{LL} > AS_{HL}$$

$H_{3.4}$ Students with high language anxiety (HL) using the Text + Sound + Phonetic Symbols + Face Gestures (TSPF) mode will attain significantly higher achievement scores (AS) than students with high language anxiety (HL) using the Text + Sound + Phonetic Symbols + Mouth Movements (TSPM) mode.

$$AS_{HL\text{-}TSPF} > AS_{HL\text{-}TSPM}$$